

535,290

Rec'd PCT 17 MAY 2005

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
10 June 2004 (10.06.2004)

PCT

(10) International Publication Number  
**WO 2004/049631 A1**

(51) International Patent Classification<sup>7</sup>: **H04L 12/28**

[GB/GB]; c/o Philips Intellectual Property & Standards,  
Cross Oak Lane, Redhill, Surrey RH1 5HA (GB).

(21) International Application Number:  
PCT/IB2003/005021

(74) Agent: **WHITE, Andrew, G.**; Philips Intellectual Property & Standards, Cross Oak Lane, Redhill, Surrey RH1 5HA (GB).

(22) International Filing Date:  
7 November 2003 (07.11.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
0227287.0 22 November 2002 (22.11.2002) GB

(71) Applicant (for all designated States except US): **KONINKLIJKE PHILIPS ELECTRONICS N.V.** [NL/NL];  
Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

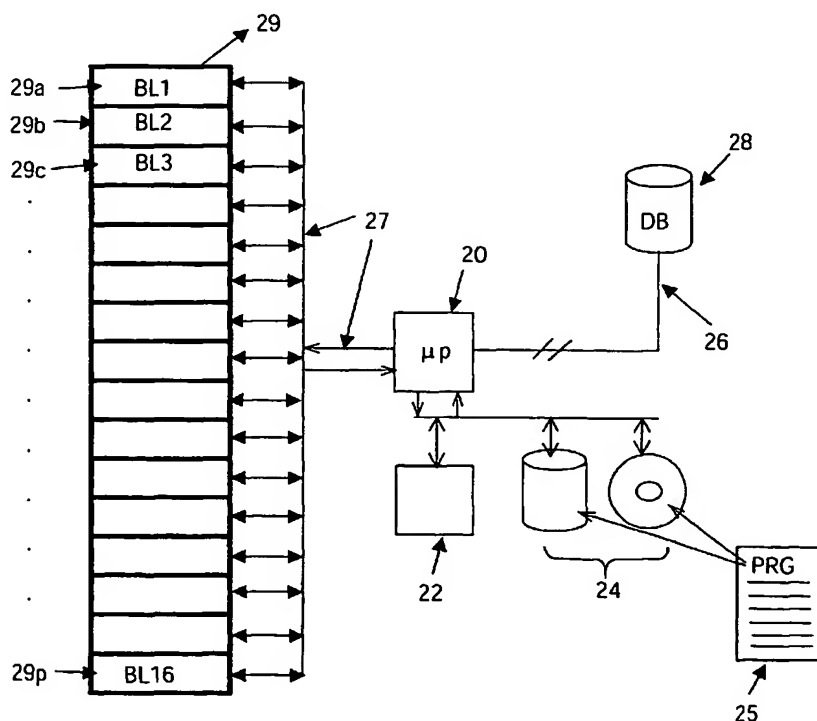
(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,

(72) Inventor; and

(75) Inventor/Applicant (for US only): **SIMONS, Paul, R.**

[Continued on next page]

(54) Title: **ROBUST COMMUNICATION SYSTEM**



(57) Abstract: A primary station (10) for use in a communication system is described, the system operating according to a predetermined protocol. The primary station is capable of managing a plurality of piconets having secondary stations (12a, b, c) which communicate with the primary station on individual logical radio channels. In particular, the capacity available on the channels is monitored (20,25) and the channels in use controlled thereby enabling the secondary stations to communicate even in periods of heavy use. The primary station is suitable for application as a wireless access point in public spaces (airports, train stations) and in business or home scenarios where robust low power multiple radio networks are required.

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SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Declaration under Rule 4.17:**

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO*

*patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)*

**Published:**

- *with international search report*

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## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/IB 03/05021

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 H04L12/28

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 H04L H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC, COMPENDEX

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 259 686 B1 (ACX ANNE-G AUML ELE ET AL) 10 July 2001 (2001-07-10)	1,2,5-8
Y	column 1, line 62 -column 2, line 16 column 4, line 47 -column 7, line 10 column 8, line 7 - line 53 figures 1,3,4	3,4,9-14
X	EP 0 977 377 A (MITSUBISHI ELECTRIC CORP) 2 February 2000 (2000-02-02) column 6, line 46 -column 7, line 13 column 8, line 13 -column 9, line 46 column 10, line 14 -column 11, line 19 figures 1,2,3A,3B,5A,5B,9,12A,12B,13A,13B	1,6,7
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☒ Further documents are listed in the continuation of box C.

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- \*&\* document member of the same patent family

Date of the actual completion of the international search

5 February 2004

Date of mailing of the international search report

25/02/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Rosenauer, H

## INTERNATIONAL SEARCH REPORT

Internet

Application No

PCT/IB 03/05021

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 283 683 A (HITACHI LTD) 28 September 1988 (1988-09-28) column 1, line 6 - line 10 column 2, line 24 - line 35 column 4, line 56 - column 5, line 27 column 6, line 21 - column 7, line 46 figures 1,3,6A	1,6,7
A	WO 01 56310 A (VERIZON LAB INC ;GTE WIRELESS INC (US)) 2 August 2001 (2001-08-02) page 12, line 18 -page 13, line 21 figure 3	1-14
Y	WO 00 69197 A (QUALCOMM INC) 16 November 2000 (2000-11-16) page 7, line 13 - line 19 page 7, line 35 -page 8, line 10 figure 2	11-14
Y	P. GORDAY, J. GUTIERREZ, P. JAMIESON: "IEEE 802.15.4 Overview" IEEE P802.15 WORKING GROUP FOR WIRELESS PERSONAL AREA NETWORKS (WPANS); IEEE 802.15-01/509R0, 'Online! 12 November 2001 (2001-11-12), page 1-28 XP002267446 Retrieved from the Internet: <URL:http://grouper.ieee.org/groups/802/15 /pub/2001/Nov01/01509r0P802-15_TG4-Overvie w.ppt> 'retrieved on 2004-01-20! page 4 -page 28	3,4,9,10
A	P. JAMIESON: "MAC Issues D17" IEEE P802.15 WORKING GROUP FOR WIRELESS PERSONAL AREA NETWORKS (WPANS); IEEE 802.15-02/476R0, 'Online! 15 November 2002 (2002-11-15), page 1-6 XP002267447 Retrieved from the Internet: <URL:http://ieee802.org/15/pub/2002/Nov02/ 02476r0P802-15_TG4_MAC_Issues_D17.ppthttp: //ieee802.org/15/pub/2002/Nov02/02476r0P80 2-15_TG4_MAC_Issues_D17.ppt> 'retrieved on 2004-01-20! the whole document	1-14

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International

Application No

PCT/IB 03/05021

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6259686	B1	10-07-2001	FR 2767007 A1 AU 744916 B2 AU 8868798 A EP 1000521 A1 WO 9907172 A1	05-02-1999 07-03-2002 22-02-1999 17-05-2000 11-02-1999
EP 0977377	A	02-02-2000	WO 9931823 A1 EP 0977377 A1	24-06-1999 02-02-2000
EP 0283683	A	28-09-1988	JP 2641441 B2 JP 63232533 A JP 1122219 A JP 2602251 B2 DE 3886967 D1 DE 3886967 T2 EP 0283683 A2 US 4881271 A	13-08-1997 28-09-1988 15-05-1989 23-04-1997 24-02-1994 07-07-1994 28-09-1988 14-11-1989
WO 0156310	A	02-08-2001	US 6314293 B1 AU 3104901 A WO 0156310 A1	06-11-2001 07-08-2001 02-08-2001
WO 0069197	A	16-11-2000	AU 4832100 A CN 1360799 T EP 1188335 A1 WO 0069197 A1	21-11-2000 24-07-2002 20-03-2002 16-11-2000